

REMARKS

By the above actions, the specification and claim 1 have been amended. In view of these actions and the following remarks, reconsideration of this application is requested.

With regard to the objection to the specification, the above amendments update the references to pending applications to show their patented status, the reference numeral "21" has been changed to "11" and the word "two" has been changed to "too" as required. Thus, since the grounds for the objection have been eliminated, the objection to the specification should now be withdrawn and such is hereby requested.

Claim 1 was rejected under 35 U.S.C. § 102 as being anticipated by the disclosure of the Morimoto et al. patent. However, this is clearly not the case as should become apparent from the following comments.

In accordance with the present invention, as disclosed, claimed and illustrated, the inner lead part 11 and the outer lead part 13, are parts of the same lead bar 11, and this lead bar 11 extends "through" the functionally gradient material 21. As indicated in the appended dictionary definition of the word "through" this means that the lead bar goes "[i]n one side and out the opposite" side. Given the Examiner's apparent misconception of the meaning, claim 1 has been amended to expressly state what is inherent in the term "through," making the claim clearer but not narrower.

In contrast to the present invention, in the Morimoto et al. patent, nothing passes "through" the functionally gradient (sealing) body 5. Contrary to the Examiner's assertion, lead bar 6 does **not** pass "through" the body 5. The Examiner's attention is directed in this regard to column 2, lines 36-49 of the Morimoto et al. patent which state that the cathode and anode 4 are "inserted into an opening in the sealing body 5" and "are hardened into sealing body 5" and like the electrodes 3, 4, the outer leads 6 "are centered on the end walls of sealing body 5, are inserted into an opening of the sealing body 5 ... and likewise are connected to sealing bodies 5. Thus, what is described in the Morimoto et al. patent is an arrangement where an electrode is plugged into one end of each sealing body 5 and an outer lead is plugged into the opposite end of each sealing body 5. Not only does the Morimoto et al. patent not describe or suggest a lead that extends "through" the sealing body 5, but it would be impossible for the lead 6 to extend "through" the sealing body 5 due to the presence of the electrode that has been connected in the opposite end thereof.

As a result, since Morimoto et al. does not even render obvious a key aspect of the present present invention, let alone anticipate it, the rejection based thereon is fatally defective and must be withdrawn, such action now being requested.

As for the rejections under 35 U.S.C. § 103 based on the Morimoto et al. patent when viewed in combination with either the patent to Wei et al. or the patent to Nagayama, these rejections not only suffer from the basic deficiencies of the Morimoto et al patent, but the teachings of these patents which have been relied upon by the Examiner have no direct applicability to either the present invention or the Morimoto et al. patent. That is, both the present invention and the Morimoto et al. patent relate to lamp seal arrangements having a functionally gradient body which varies in conductivity from being conductive at one end to being dielectric at the opposite end. In contrast, neither the patent to Wei et al. nor the patent to Nagayama state anything with respect variation of the conductivity of their end caps.

Instead, the patent to Wei et al. discloses the use of a multipart plug having a "structure that comprises at least four axially aligned parts with different coefficients of thermal expansion," not electrical conductivity. Furthermore, "the outermost ring zone 11g is directly sintered to the molbdiyeum [*sic*] tube 7b" which is disclosed as having "40%" or "40-43%" tungsten and since tungsten is a conductive material, this patent teaches attaching of the feed tube to a point which has a proportion of conductive material that exceeds the upper limit of that set forth in claim 1.

As for the patent to Nagayama, hereto, the composition of the layers making up the sealing structure is selected based on their thermal expansion coefficient, not the conductivity of these layers; see, e.g., the last paragraph of column 23. Furthermore, since the outermost layer 303n into which electrode rod 304 is threaded is either formed of 80% tungsten (Table 4) or is formed entirely of tungsten and nickel (see Table 7), here again, attachment occurs at a point which has a proportion of conductive material that exceeds the upper limit of that set forth in claim 1.

Accordingly, it is submitted that the present invention cannot be rendered obvious from anything taught by the Morimoto et al. patent no matter how it might be viewed in combination with either of the patents to Wei et al. or Nagayama. Therefore, withdrawal of the rejections under § 103 is in order and is requested.


The prior art which has been cited but not applied by the Examiner has been taken into consideration during formulation of this response. However, since this art is not any more relevant than that relied upon by the Examiner and was not considered by him to be of sufficient relevance to applied against the original claims, no detailed discussion thereof is believed warranted at this time.

While the present application is now believed to be in condition for allowance, should the Examiner find some issue to remain unresolved, or should any new issues arise, which could be eliminated through discussions with applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited.

Lastly, it is noted that a separate Extension of Time Petition accompanies this response along with a check in payment of the requisite extension of time fee. However, should that petition become separated from this Amendment, then this Amendment should be construed as containing such a petition. Likewise, any overage or shortage in the required payment should be applied to Deposit Account No. 19-2380 (740145-148).

Respectfully submitted,

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Mark-Up Showing Amendments Made

In the Specification:

Please amend the paragraph beginning on line 21 of page 2 to read:

Other disclosures of the use of functionally gradient materials in lamp seals can be found in commonly owned, co-pending U.S. Patent [Application] Nos. 6,107,740; 6,271,627 [09/142,180; 09/147,115;] and 6,175,188.

Please amend the paragraph beginning on line 6 of page 4 to read:

First, if the inner diameter of the lead bar insertion hole is [two] too small, and the gap between the lead bar and the functionally gradient material is too narrow, during sintering in the process of manufacturing the functionally gradient material, the functionally gradient material will contract greatly, and at the same time, the lead bar inserted in the hole will undergo thermal expansion, so that the functionally gradient material will contact the lead bar in the region of a high proportion of the non-conductive material, and cracking will occur. And if the inner diameter of the lead bar insertion hole is too large, the wall of functionally gradient material will be too thin and handling during the production process prior to sintering will be difficult, resulting in breakage of the functionally gradient material. Moreover, even after the seal piece is created, deformation of a seal that is too thin during the subsequent process of manufacturing, such as when the silica light-emitting tube of the lamp is sealed by welding, would lead to problems in the manufacturing process.

Please amend the paragraph spanning pages 5 & 6 to read:

In Figure 1, an example of the lamp seal 20 using the functionally gradient material of this invention is shown which comprises functionally gradient material 21 and a lead bar (electrode bar) [21] 11. The functionally gradient material 21 has an insertion hole 25 for the lead bar 11, and the lead bar 11 passes through the insertion hole 25 and is attached therein at a point of attachment 26, to be described hereafter, between the lead bar 11 and the functionally gradient material 21. The functionally gradient material has a non-conductive end 22 and a conductive end 23. Within the functionally gradient material 21, the inside diameter of the insertion hole 25 is enlarged from the point of attachment 26 to the non-conductive end 22, forming a cylindrical gap 24 between the lead bar 11 and the functionally gradient material 21.

In the Claims:

1. (Amended) A lamp seal comprising a functionally gradient material and a lead bar; wherein the functionally gradient material has layers of mixtures of electrically non-conductive material and conductive material in which a layer at one end is non-conductive and a layer at an opposite end is conductive, with intervening layers in which the proportion of conductive material increases moving from said one end to said opposite end; wherein the lead bar passes through a hole extending through the functionally gradient material entering in [a direction of between] one of said ends and out the other of said ends; wherein the lead bar is attached in a conductive region of the functionally gradient material; and wherein the proportion of conductive material at a point of attachment of the lead bar to the functionally gradient material is no less than 0.6 Vol% and no more than 39 Vol%.

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THE
AMERICAN
HERITAGE[®]
DICTIONARY
OF THE
ENGLISH LANGUAGE

THIRD EDITION



HOUGHTON MIFFLIN COMPANY

Boston · New York

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throne
Coronation throne of
Edward the Confessor

protein in platelets that is active in the formation of blood clots. [THROMBO- + -GENE (thromb-, thromb-) + -ASE]

throm-box·ane (thrombŏk's-ān) *n.* Any of several compounds that inhibit or prevent from proceeding the processes in platelets that stimulate aggregation of platelets and constriction of blood vessels. [THROMBO- + -GENE (thromb-, thromb-) + -ANE]

throm-bus (thromb'us) *n.* **-bi-** (-bi) A thrombotic clot formed in a blood vessel, or a chamber of the heart. [New Latin, from Greek *thrombos*, clot]

throne (thrōn) *n.* 1. A chair occupied by an exalted personage, such as a sovereign or bishop, on state or ceremonial occasions, often situated in a dais and sometimes having a canopy and ornate decoration. 2. *a.* A personage who occupies a throne. *b.* The power, dignity, or rank of such a personage, sovereignty. 3. *thrones.* *Theology.* The third of the nine orders of angels. —*throne* *tr* + *intr* *throne*, *throne*, *throne*. To install in or occupy a throne. [Middle English, alteration of *trone*, from Old French, from Latin *thronus*, from Greek *thronos*. See *dher-* in Appendix.]

throng (thrōng, thrōng) *n.* 1. A large group of people gathered or crowded closely together, a multitude. See *Synonyms at crowd*. 2. A large group of things, a host. —*throng* *v.* *thronged, thronging, throngs.* —*tr* 1. To crowd into; fill. *commuters thronging the subway platform.* 2. To press in on. —*intr* To gather, press, or move in a throng. [Middle English, from Old English *gethrang*.]

thros·fle (thrōs'fāl) *n.* 1. Any of various Old World thrushes, especially a song thrush. 2. A machine formerly used for spinning fibers such as cotton or wool. [Middle English, from Old English.]

throt·tle (thrōt'l) *n.* 1. A valve that regulates the flow of a fluid, such as the valve in an internal-combustion engine that controls the amount of vaporized fuel entering the cylinders. 2. A lever or pedal controlling such a valve. —*throttle* *tr* *-tled, -tling, -tles.* 1. *a.* To regulate the flow of (fuel) in an engine. *b.* To regulate the speed of (an engine) with a throttle. 2. To suppress. *tried to throttle the press.* 3. To strangle; choke. [Short for *throttle valve*, from *throttle*, to strangle, choke, from Middle English *throtelen*, probably from *throte*, throat. See *THROAT*.] —*throt'tler* *n.*

throt·tle·hold (thrōt'l-hōld') *n.* See *stranglehold* (sense 2).

through (thrō) *prep.* 1. In one side and out the opposite or another side of: *went through the tunnel.* 2. Among or between; in the midst of: *a walk through the flowers.* 3. By way of: *climbed in through the window.* 4. *a.* By the means or agency of: *bought the antique vase through a dealer.* *b.* Into and out of the handling, care, processing, modification, or consideration of: *Her application went through our office.* *Run the figures through the computer.* 5. Here and there in, around: *a tour through France.* 6. From the beginning to the end of: *stayed up through the night.* 7. At or to the end of; done or finished with, especially successfully: *We are through the initial testing period.* 8. Up to and including: *a play that runs through December; a volume that covers A through D.* 9. Past and without stopping for: *drove through a red light.* 10. Because of; on account of: *She succeeded through hard work.* *He declined the honor through modesty.* —*through* *adv.* 1. From one end or side to another or an opposite end or side: *opened the door and went through.* 2. From beginning to end; completely: *I read the article once through.* 3. Throughout the whole extent or thickness; thoroughly: *warmed the leftovers clear through; got soaked through in the rain; a letter that was shot through with the writer's personality.* 4. Over the total distance; all the way: *drove through to their final destination.* 5. To a conclusion or an accomplishment: *see a matter through.* —*through* *adj.* 1. Allowing continuous passage, unobstructed: *a through street.* 2. *a.* Affording transportation to a destination with few or no stops and no transfers: *a through bus; a through ticket.* *b.* Continuing on a highway without exiting: *through traffic; through lanes.* 3. Passing or extending from one end, side, or surface to another: *a through beam.* 4. Having finished, at completion: *She was through with the project.* 5. Having no further concern, dealings, or connection: *I'm through with him.* 6. Having no more use, value, or potential: *washed up.* *That swimmer is through as an athlete.* —*idiom.* *through and through.* 1. In every part, throughout: *vet through and through.* 2. In every aspect: *a success through and through.* [Middle English *thurh*, *through*, from Old English *thurh*. See *tere-* in Appendix.]

through·ly (thrō'lē) *adv.* Archaic Thoroughly

through·out (thrō'out) *prep.* In, to, through, or during every part of; all through: *The road is kept open throughout the year.* —*throughout* *adv.* 1. In or through all parts; everywhere: *The material is flawed throughout.* 2. During the entire time or extent: *Though unsure how her speech would be received, she remained calm and professional throughout.*

through·put (thrō'pūt) *n.* Output or production, as of a computer program, over a period of time

through·way (thrō'wā) *n.* Variant of *thruway*.

throve (thrōv) *v.* A past tense of *thrive*.

throw (thrō) *v.* *threw* (thrō), *thrown* (thrōn) *throw·ing, throws.* —*tr* 1. To propel through the air with a motion of the hand or arm. 2. To discharge into the air by any means: *a machine that threw tennis balls; ash that was thrown by an erupting volcano.* 3. To hurl or fling with great force or speed: *threw themselves in the food; a pet that had been thrown up into the*

hole. 4. *a.* To hurl to the ground or floor as if in a fit of rage. *b.* To cause to fall. *If the horse threw me, I was in a bad way.* 5. To cause confusion or perplexity in, disconcert: *We didn't know where to go.* 6. To put carelessly: *threw on a jacket.* 7. *a.* To put suddenly into a given condition or position of activity: *threw laughter there; some couples together; threw her at the chair.* *b.* To deliver or apply or direct: *threw out the new conductor; threw the blame.* 8. To form on a potter's wheel: *threw a vase.* 9. To interweave; intermix: *threw the two stories together.* 10. *Games.* *a.* To roll (dice). *b.* To play a combination with dice. *c.* To discard or pass: *threw out the project.* *d.* To send forth, project: *She threw me a look.* 11. To cause to fall on or over something; cast: *threw shadows across the lawn.* *We threw snow before ice painted the ceiling.* 12. To beat down or horses, for example. 14. To arrange or set (example). 15. To move (a lever or switch) in to deactivate, or control a device. 16. *Informal.* To contest, for example) purposely. 17. To abandon: *heard the news and threw a fit.* 18. To contribute especially for leniency or support: *threw himself in the court.* 19. To deliver (a punch), as in boxing: *hook.* —*intr* To east, fling, or hurl something. The act or an instance of throwing. 2. The distance something is or can be thrown: *a stone's throw.* 3. *a.* A roll or cast of dice. *b.* The combination obtained. 4. *Informal.* A single chance, venture, or effort: *afford up to forty-five bucks; a throw to wear sentimental heritage* (John Simon). 5. *Sports.* The act of throwing used to throw an opponent in wrestling. 6. A garment, such as an afghan. 7. A scarf or shawl. 8. A circle described by a crank, cam, or similar part. The maximum displacement of a machine part, such as a crank or cam. 9. *Geology.* The displacement of a fault. —*phrasal verbs.* *throw* To get rid of as useless: *threw away yesterday's Games.* To discard: *threw away two aces.* 2. *a.* To waste or use in a foolish way: *threw away her inheritance.* To perform in an offhand, seemingly careless manner: *threw away the news that the house had thrown back.* 1. To hinder the progress of; check: *thrown back.* 2. To revert to an earlier type or state. 3. To cause to depend; make reliant. *throw in.* To introduce into the course of something: *threw in a comment while they conversed.* 2. To add (an extra) with no additional charge. 3. To engage (a clutch). *throw off.* 1. To cast out; rid oneself of: *threw off memories.* 2. To give off; emit: *exhaust pipes threw off.* 3. To distract, divert, or mislead: *Crossing the street the tracking dogs off.* *A wrong measurement threw off.* 4. To do, finish, or accomplish in a casual or hasty way: *threw off a quick response to the letter.* 5. To make more accessible, especially suddenly or abruptly: *opened the nomination.* *throw out.* 1. To give off lights: *threw out powerful beams.* 2. To reject: *committee threw out her proposal.* 3. To get rid of: *threw out the garbage.* 4. *Informal.* To offer, as a plan: *They sat around throwing out names of people to invite to the party.* 5. To force to leave, especially in an abrupt or unexpected manner: *judge was thrown out of office.* *The headwaiter rudely guest out.* 6. *a.* To disengage (a clutch, for example) put out of alignment: *threw my back out.* 7. *Base (a base runner)* by throwing the ball to the player to which the base runner is moving: *threw out; threw the runner out.* 2. To abandon: *boyfriend of four years; threw over the company he had founded.* 3. To reject: *throw up.* 1. To vomit; relinquish: *She threw up her campaign for construct hurriedly shoddy houses that were the months.* 4. To refer to something repeatedly: *Al past to him whenever they argued.* 5. To project or display (a slide, videotape, or other recording): *threw up vacation highlights up on the screen.* *throw (one's) weight around.* *Slang.* To use power especially in an excessive or heavy-handed way: *threw out with the bath water.* *Slang.* To discard something along with something not desired, usually unintentionally: *threw up (one's) hands.* To indicate or express utter helplessness: *threw up his hands and abandoned the argument.* *threw in.* To turn, twist, hurl. [from Old English *tere-* in Appendix.] —*throw'er* *n.*

SYNONYMS: *throw, cast, hurl, fling, pitch, toss.* These verbs mean to propel something through the air with the hand or arm. *Throw* is the least specific: *threw the life preserver to the struggling swimmer.* *Cast* usually refers to throwing something: *angler cast her line into the stream.* *Hurl* and *pitch* with great force: *"Him the Almighty Power/Hurl'd from th' Ethereal Sky"* (John Milton). *Threw* were given connotations: *threw the bride and groom into the air.* *Threw* means to throw with careful aim: *"a special ball into which I pitch letters, circulars, pamphlets"*